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54 Mail sorting and distribution system.

57 A new method for mail processing by which the sender of a mail (letter and/or parcel) does not have to write the address and zip code number of the addressee on the envelope; and with the help of a computer, rapid and safe mail distribution can be effected.

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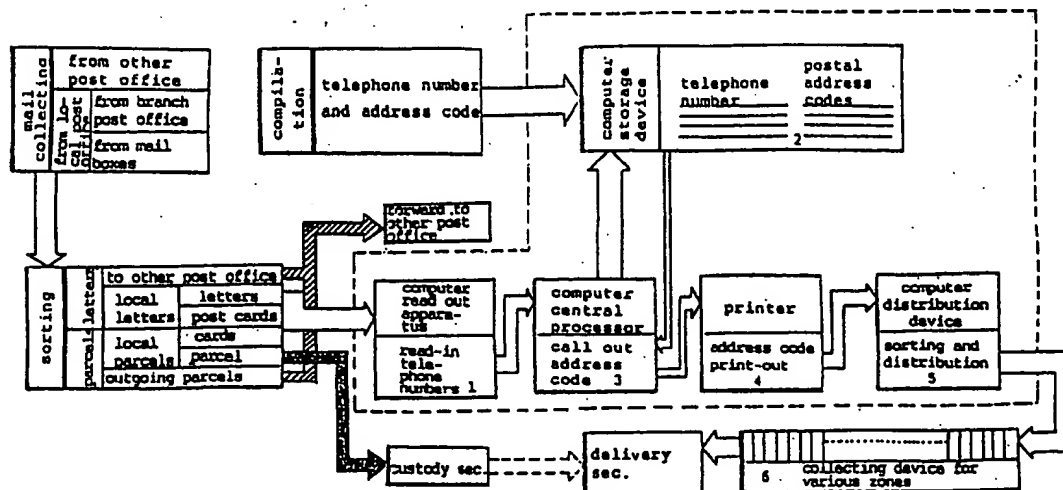


FIG. 1.

## MAIL SORTING AND DISTRIBUTION SYSTEM

The object of the invention is to free mail senders from the trouble of looking for, memorizing, and writing the zip code and address of the addressee, thus avoiding any possible mistakes to be made in such work. Under certain conditions, the new method can be used to trace an addressee to his new address and reduce the number of "undeliverable" mails.

Another object of the invention is to keep the address of the addressee secret, as people may not want their addresses to be made public, and, at the same time, to make the postman's distribution work much easier while difficulties caused by misprint, unclear writing, and mistaken omissions in addresses can be substantially avoided, so as to provide a short-cut for mail delivery and ensure correctness in address identification.

The new method according to the invention includes measures to encode the telephone numbers and detailed addresses of all civil and private organizations as well as private homes (such information is obtainable from application papers for telephone installation) and store this information into the main memory in the computer center at the post office to establish a file; the post office should make available standard envelopes and cards, which are suitable for the post office computer to read in and distribute then for mail senders' use. The only thing left for the mail sender to do is to mark out at particular positions on the standard envelopes and/or cards certain signs representing the telephone number of the addressee. After all mails are collected into the post office, post office workers will respectively put the letters and cards to be delivered locally into the computer to read out the telephone numbers marked thereon, with these telephone numbers, the corresponding postal address codes stored in the file are called out from the memory apparatus and printed at the designated locations on envelopes or cards. At this time, the sorting and distribution apparatus will receive control instructions from the computer and direct the envelopes and cards to respective mail collecting devices for different postal delivery zones; the postmen concerned can just pick up the already sorted mails and rapidly deliver them to various local addressees.

The detailed operation, advantage, and effect of this new method for mail sorting and distribution in accordance with the present invention are evident in the detailed explanation of preferred embodiments and the accompanying diagram in this application.

The accompanying diagram show the operational flow of the rapid sorting and distributions

method for mails, in which the entire operational flow of the method according to the present invention is divided into the following four steps:

Traditional basic work at the post office —

- 5 This work includes collection of mail from post offices of other locations and from the local branch post offices as well as various mail boxes in town. The main effect in this stage is to sort the mails into two categories, i.e. mails going out to other locations and mails to be delivered locally; the latter are the ones to be handled with the rapid distribution method.

Preparatory work for rapid distribution —

- 15 In order to establish the rapid distribution system in accordance with the invention, the first preparation to be made by the post office is to compile postal address codes for computer use. In the compilation work of such codes, information obtained from local telephone directories or application documents for telephone installation can be utilized and put together with relative zip codes suitable to the responsible area under the care of the concerned post office. The main points in this regard are as follows:

- 25 First, obtain the telephone numbers and corresponding addresses in the concerned zip zone, and then have the zip code numbers of the relevant addresses recarded; such a combination of information will be able to indicate names of the city, town, village, road, and street. Usually, there are no more than 26 names of villages, roads, and streets in any zip zone. Therefore, in order to determine which village, road, or street in the same zone, the English alphabet corresponding in sequence to the ordinal number assigned to the village, road, or street in the list of places in the zip zone can be used as a code. The door numbers are used to indicate various homes while the abbreviation of the name of a building can be used to indicate the building; an "F" is placed before the ordinal number of the flat to indicate the floor.

- 40 For example, the postal address code for "7 Lane 10, Hsin-Chung Street, Sung-Shan, Taipei" is "10595AL10,7". From the zip code directory we find both Hsin-Chung Street and San-Min Street have the same zip code 10595 and Hsin-Chung Street comes first in the list; therefore, the alphabet "A" is placed after the zip code. As to "Lane 10", it is indicated by L10.

- 50 For an address such as "Floor 7-3, 102 Hsing-Huei Village, Chung-Li, Taoyuan", the zip code number assigned to this area is "32026"; from the zip code number directory, we find "Hsing-Huei Village" stands 15th in the name list of localities under this zip code; therefore, the 15th alphabet "O"

is used here; also an "F" is placed before the ordinal number of the floor, thus constituting a postal address code for the above mentioned address as "32026 0102F7-3".

In the United States, there is no such division as "li", "lane", "alley", "section" etc. in an address and most U.S. addresses are in short forms, plus all of them are made up with English alphabets and numerals. Therefore, with only abbreviated words and added codes to distinguish identical names in the area of same zip code, "postal address codes" can readily be compiled. As far as explicit addresses are concerned, no change is needed as the address itself can serve as "postal address code" to be filed in the computer memory means.

Example: P0B0X570MN89432

For an address relatively long but no other ones similar to it, abbreviations of English words contained in the address can be used. For example "1801 FOX AVENUE TOWN AND COUNTRY VILLAGE CA 95801" can be simplified as "1801 FOX/A, TOWN \* C/V CA 95821".

In case the address is rather long and there are many similar names in the area under same zip code, a serial number can be given to each of the abbreviations of the similar names.

For example, in the area under the zip code of "CA92010", there are many names as "WHITNEY" and "WILD". In this case, serial numbers can be attached to the first several alphabets of these names to distinguish them. For example, "12 WHITNEY STREET 1ST AVE CHULA VISTA CA92010" can be simplified into a postal address code as "12 WHI-1, 1/A, CH/VI/CA92010."

In a word, the postal address code is derived from simplification of the address itself and used to facilitate computer storage and out-put for postmen to identify; thus the compilation of it must be simple and explicit in nature. Information needed for this purpose can, of course, be obtained from the word table however, it is preferred to let the local postmen select what is easier to remember for themselves and customarily used by local residents. It is said that the U.S. Postal Service has been trying to use 8-digit zip code numbers; such practice will certainly facilitate more simplification of postal address codes.

The necessary preparatory work on the part of the post office is to make available standard envelopes and cards for letter or parcel senders to fill out. Since these envelopes and cards are mediums for photoelectric readers, sizes and formats of such envelopes and cards should be determined with consideration of requirements for photoelectric readers. With a view to meeting the feature of the photoelectric reader, mail senders are requested to write Arabic numerals in a particular type at the particular location designated on the envelope or

card; or a blank form can be printed on the edge of an envelope or a card for the mail sender to mark out to indicate figures.

In addition, in order to assist the postman in his delivery work, "Check Table of Telephone Numbers and Corresponding Postal Address Codes" should be prepared by the post office to aid whoever works on the job to identify, check, and memorize this information as well as to provide assistance in training of new recruits.

The last preparatory work for rapid distribution of mails is to establish at the computer center, a data file of the telephone numbers and corresponding postal address codes or detailed addresses.

Rapid distribution operation — All mails are firstly processed at the post office through traditional basic process of "collecting" and "sorting"; then letters (sealed letters or post cards) and postal parcel cards to be delivered locally are put into the computer read device 1 for read-in of the telephone numbers. Telephone numbers being read in are put into the computer's main memory device 2; the central processor 3 of the computer will immediately take out the read-in telephone numbers of the mails from the memory file and translate them into corresponding postal address codes or detailed addresses, which will then be sent back to the main memory 2, the main memory 2 in turn will send this information to printer device 4 to have the postal address codes or detailed addresses printed on the standard envelopes, post cards or postal parcel cards. Finally, the sorting and distribution device 5 of the computer will sort the mails (envelopes, post cards, and postal parcel cards) and distribute them to various collecting devices for respective areas of different zip codes. At this point, the entire operation of rapid distribution of mails is completed.

The postmen responsible for different postal delivery zones, after being relieved from the hard and time-consuming sorting and distribution work formerly done by themselves and refreshed from a good rest, can now go to the collecting device 6 to pick up the mails to be delivered in their respective delivery zones and deliver the mails to addressees represented by various postal address codes.

In the establishment of such rapid distribution system for mails, depending on the capacity of the main memory at the computer center, considerations may necessarily be given to the read-in, storage and printing of the postal address codes or detailed addresses. In a post office which has a "Delivery Section", it is preferably to set up a computer center therein to utilize several read and printing devices to enhance the efficiency. Also, a central computer center can be shared on time-division basis by several post office in different counties and cities with their own terminal equip-

ment. This will all be dependent on the volume of the mail and the condition of computer facilities.

Completion of rapid distribution work — The post office which operates with this system will use the method disclosed herein to handle only local mails and mails from other localities for local delivery. Out-going mails to other cities or towns can be processed in a similar way as stated herein by their post offices upon arrival of the mail.

Now, with the accompanying diagram as a reference the entire operating procedure (starting from the traditional basic work) to be worked out by a post office will be explained with an embodiment thereof:

Assume that in the mails received by a post office in Los Angeles on a certain day, there is a letter marked with a telephone number "808-765-6992", a postal parcel card marked with a telephone number "213-868-1457", and a letter from New York marked with a telephone number "312-525-7777". As the first letter is intended for HONOLULU (HI) and the third one for CHICAGO (ILL), these two letters are, therefore, not to be processed locally and will be forwarded to their respective destinations. Only the second mail, the postal parcel card, is to be delivered locally in Los Angeles. After this card is processed through devices 1, 2, 3, 4 in the rapid distribution system, such an information as "13902 GARD/NORCA00650" is printed on the card. After the card is further processed through devices 5 and 6 of the system, it is put into the collecting device for the concerned postal delivery zone. The postman who delivers mails for that particular zone will pick up the card and rapidly deliver the parcel to "13902 GARD NORWALK" with assistance of his familiarization with and knowledge of the zone.

Here an analysis of the efficiency of the rapid distribution system in accordance with the invention is made to explain the value of the invention. Take the city of Taipei for instance, in this city there are about 1.7 million telephones installed, and the average number of mails handled in Taipei per day is around 1 million. The ratio between the two is 10:17. In order to distribute such a quantity of mails, 16 working stations are set up throughout the city and a total of 640 workers divided in two shifts a day are involved in the day-and-night busy work of preliminary sorting and final sorting of the mails. Say the average monthly pay for each worker is US\$500, a total of US\$320,000 will be required per month and US\$3,840,000 per year. If the system disclosed herein is procured from the U.S. (with installation included) to computerize the mail process, the cost is estimated below 1/5 of the above figure and the regular expenditure is even less than 1/20 of the above figure. After 5 years' use of the system, a total of US\$17,472,000 will be saved. By

the same token, if this system is adopted throughout the United States, the amount to be saved will be several hundred times of what is saved in Taipei city. This depicts only the material profits and advantages, which are actually limited when comparing with the immense value resulting from time saving, manpower economy and enhancement in efficiency.

From the above description, one can readily see the following remarkable advantages to be derived from the use of the rapid distribution method for mails in accordance with the present invention: Simple operation; economy in manpower, funds, time, and space; easy way for postal work, addressees, and mail senders to keep in secrecy; ability to trace the addressees to their new addresses by utilizing the telephone relocation information, thus reducing the telephone relocation information, thus reducing the possibility of "dead" letters. All these will assist in the communication among people and spreading and advancement of technology and industrial information.

## Claims

1. A rapid sorting and distribution method for mails, including measures to use the telephone numbers of mail addresses to facilitate the distribution and process of mails; to store the telephone numbers, detailed addresses, and zip code numbers of mail addressees in the memory means of the post office central computer system to establish files; to compile postal address codes for computer process; to make available and distribute standard envelopes and cards suitable to be read in by the post office computer for mail senders' use; and to prepare a check table of telephone numbers and corresponding postal address codes for postmen to identify, check, and memorize.

2. The method according to claim 1, wherein the postal address codes are compiled with information from telephone directories prepared by the telephone office and the zip code number directory prepared by the Post Service.

3. The method according to claim 1, wherein the computer read-in work is performed by the terminal equipment at various post offices, and by use of which terminal equipment, the postal address codes or detailed addresses and zip code numbers stored in the central computer are called out for printing.

4. The method according to claim 2, wherein the postal address code includes zip code number, street code, door number, and floor number.

5. A mail sorting and distribution system adapted to use the telephone numbers of mail addresses to facilitate the distribution and processing of the

mail, said system comprising means for storing the telephone numbers, detailed addresses, and zip code numbers of mail addressees in the memory of a post office central computer system to establish files; means to compile postal address codes for computer processing; means for making available and distributing standard envelopes and cards suitable to be read by the post office computer for mail sender's use; and means to prepare a check table of telephone numbers and corresponding postal address codes for postmen to identify, check and memorise.

6. A system according to claim 1 including terminal equipment at various post offices including means for reading in work and means for calling out from the central computer the postal address codes or detailed addresses and zip code numbers.

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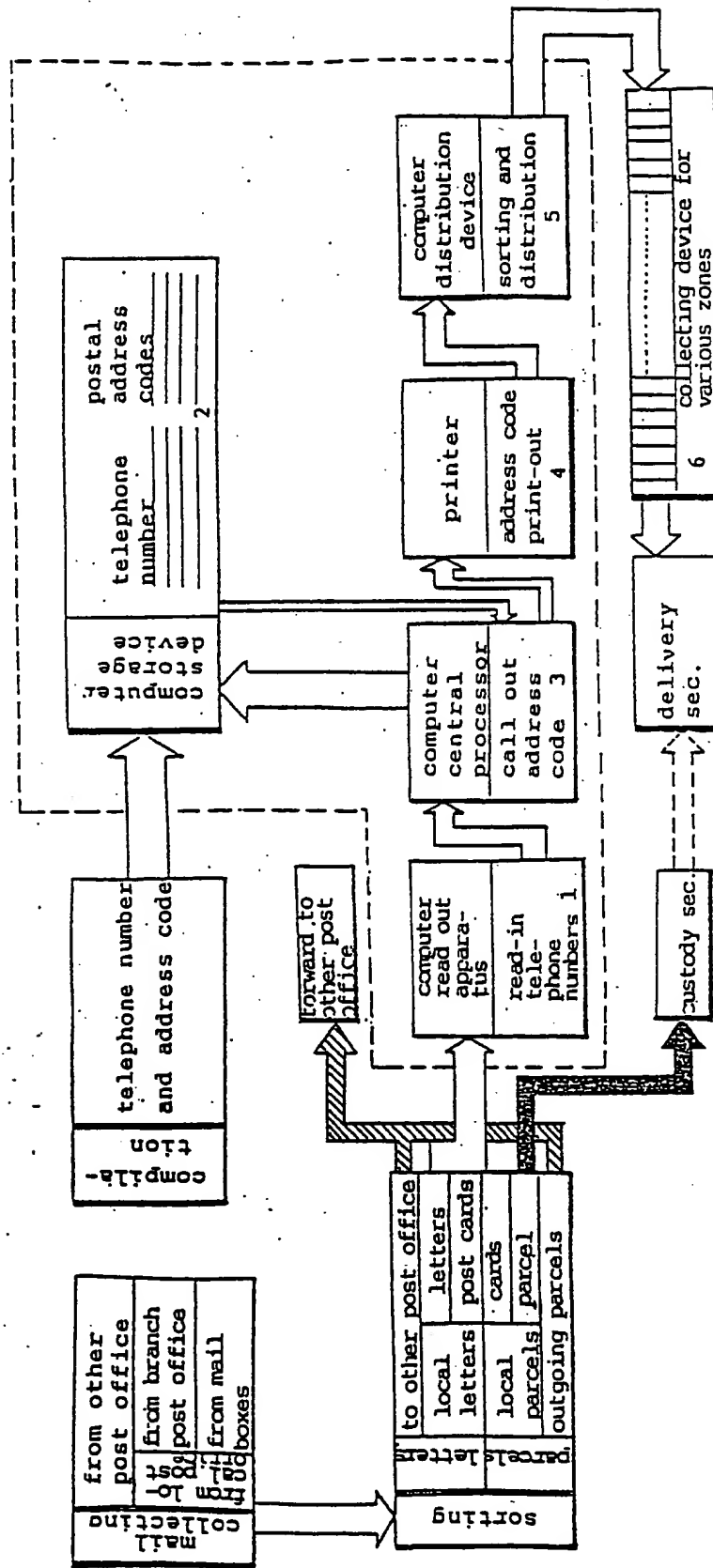


FIG. 2



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## EUROPEAN SEARCH REPORT

Application number

EP 86 31 0101

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	US-A-4 122 526 (D.F. DLUGOS) * Column 4, lines 19-33; column 6, lines 25-30, 56 *	1-6	B 07 C 3/18 B 07 C 3/00
A	--- FR-A-2 414 962 (DELABY) * Figures; page 1, lines 15-25 *	1,4	
A	--- US-A-3 858 054 (M.A. HUNTER) * Abstract *	1,5	
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			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B 07 C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14-08-1987	Examiner HENROTTE I.
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	